

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: STEPHEN E. REITER
 GRAY CARY WARE & FREIDENRICH LLP
 4365 EXECUTIVE DRIVE, SUITE 1600
 SAN DIEGO, CALIFORNIA 92121

RECEIVED

MAY 01 1999

GCWF/S.REITER

PCT

 NOTIFICATION OF TRANSMITTAL OF
 THE INTERNATIONAL SEARCH REPORT
 OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference INVIT1100WO	Date of Mailing (day/month/year)
International application No. PCT/US99/02442	FOR FURTHER ACTION See paragraphs 1 and 4 below International filing date (day/month/year) 04 FEBRUARY 1999
Applicant INVITROGEN	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer T. WESSENDORF
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0196

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: STEPHEN E. REITER
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SAN DIEGO, CALIFORNIA 92121

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Date of Mailing **28 APR 1999**
(day/month/year)

Applicant's or agent's file reference
INVITI100WO

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/US99/02442

International filing date
(day/month/year)
04 FEBRUARY 1999

Applicant
INVITROGEN

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Authorized officer
T. WESSENDORF

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference INVIT1100WO	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US99/02442	International filing date (day/month/year) 04 FEBRUARY 1999	(Earliest) Priority Date (day/month/year) 04 FEBRUARY 1998
Applicant INVITROGEN		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☒ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 - ☐ filed with the international application.
 - ☐ furnished by the applicant separately from the international application,
 - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
 - ☐ transcribed by this Authority.
4. With regard to the title, ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
 - ☒ the text is approved as submitted by the applicant.
 - ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
Figure No. _____
 - ☐ as suggested by the applicant.
 - ☐ because the applicant failed to suggest a figure.
 - ☐ because this figure better characterizes the invention.☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/02442**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/02442**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : G01N 33/53, 33/48; 33/543

US CL : 435/7.1, 6; 436/518, 536, 501, 543

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/7.1, 6; 436/518, 536, 501, 543

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, CAS

Search terms: antibodies, antigens, microarrays, nucleic acids, probes, libraries, solid support

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X - Y	US 4,591,570 A (CHANG) 27 May 1986, col. 1, lines 47-68; col. 2, lines 44-58; col. 3; lines 30-38; col. 4, lines 1-66; col. 5, Examples up to col. 8, line 14.	1,4,6,9,10, 17 ----- 5, 7-8, 11-16
X	RAMSAY, G. DNA chips: State-of-the art, Nature Biotechnology January 1988, Vol. 16, No. 1, pages 40-44, especially pages 41-43.	41-50
Y	ZIEGER, A. et al. Cucumber Mosaic Cucumovirus Antibodies from a Synthetic Phage Display Library. Virology. 1995, Vol. 214, pages 235-238, especially page 235.	1-2, 6-7, 9-13
Y	US 4,483,929 A (SZOKA) 20 November 1984, col. 8, line 38-47; col. 10, lines 48-61.	9-11

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

25 MARCH 1999

Date of mailing of the international search report

28 APR 1999

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks

Box PCT

Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

T. WESSENDORF

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/02442

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EKINS, R. et al. Multianalyte microspot immunoassay. The microanalytical 'compact disk' of the future. Ann. Biol. Clin. 1992, Vol. 50, pages 337-353, especially page 337.	1
A	MARSHALL, A. et al. DNA chips: An array of possibilities. Nature Biotechnology. January 1998, Vol. 16, No. 1, pages 27-31.	1-50

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/02442

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

Group I, claim(s) 1-40, drawn to a method of identifying antibodies having binding affinity for an antigen using array of antibodies on a solid support; method of comparing protein expression of cells; method of diagnosing a disorder and kit. Group II, claim(s) 41-50, drawn to a method of comparing protein expression patterns by contacting a microarray of nucleic acid samples with nucleic acid probes.

The inventions listed as Groups I do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the method of identifying antibodies that bind to an antigen using an microarray of antibodies do not correspond or lack structural similarity to the method of Group II using microarray of nucleic acids that binds to probes to identify or compare protein expression. The methods in each groups employ structurally and functionally different compounds i.e., antigens and nucleic acids to analyze or determine the presence of different analytes.